2000 UTC 07 September 2018 Forecast Discussion

Summary

A mesoscale convective system is currently propagating towards the area of operation with large-scale forcing from a broad low-pressure circulation. Intermittent organized convection is expected to continue impacting the area of operation over the next 36 h as this low-pressure circulation tracks towards the west. Between the 36-96 h forecast period, scattered precipitation is expected to persist near the area of operation until TD 26W makes its approach.

Invest 99W has been upgraded to TD26, and there is greater confidence in it tracking over or close to Guam by 00Z Sep 11th. The 12Z GFS shows more impacts to Guam and an earlier recurve to the north, and the 12Z ECMWF shows less impacts to Guam and a later recurve to the north (closer to the area of operation). The MJO is forecasted to remain in phase 8 throughout the 1-2 week forecast, favoring enhanced convective activity over the African continent. Both the BOM and ECMWF converge on their forecast for the BSISO over the next 5 days, favoring phase 3 of the BSISO1 index (enhanced activity over East Asia).

A monsoon trough extending across the region will continue to support the development of low-pressure circulations and the associated convection through the weekend, supported by the wet phase of an ER wave. The track of TD26W will be sensitive to the development and evolution of an extratropical cyclone and trailing mid-latitude trough, which will impact the location of the subtropical high pressure system helping to guide the TC.

Day One (24 hr) Outlook: Organized convection is expected to continue impacting the area of operation over the next 24 h as a broad low-pressure circulation remains near the area of operation. Winds will remain from the NW between 5-15 knots, although transient shifts in the wind direction and increased wind speeds are expected from mesoscale convective features moving through the area of operation. Wave heights of 3-5 ft are forecasted for the area of operation during the 24 h forecast period.

Day Two (48 hr) Outlook: Widespread precipitation is expected to continue throughout the 48 h forecast period as the GFS keeps the broad low-pressure circulation near the area of operation. Winds will remain from the NW at 5-15 knots throughout the 24-36 h forecast period and gradually shift to the N and then E-NE as the low-pressure circulation tracks to the west. Transient shifts in local wind direction and speed are expected as organized convection tracks through the area of operation. Wave heights of 3-5 ft are forecasted for the area of operation during the 24-48 h forecast period.

Extended Outlook: Beyond the 48 h forecast period, the GFS tracks the low-pressure circulation westward out of the area of operation and therefore organized convective activity is forecasted to decrease in the 48-96 h forecast, transitioning to a scattered convection regime. Beyond the 96 h forecast period, precipitation is expected to increase as TD 26W makes its

approach towards the area of operation. Wave heights will remain 3-5 ft throughout the 96 h forecast, and begin to increase as TD 26W approaches the are of operation.

Discussion

TCs: Invest 99W has been upgraded to TD26 by JTWC, and it is now currently located around 13N, 164E. TD26 is still in a favorable environment for development, and is still expected to continue developing substantially. There is less track spread between the 00Z EPS and 06Z GEFS, but the GEFS tracks are still farther north than the EPS track, and the means of the ensembles are closer to Guam. The deterministic 12Z GFS location of TD26 on 12Z Sep 12th is slightly further south than yesterday, and the deterministic 12Z ECMWF location is slightly farther west than yesterday. The 12Z GFS also has a landfall in Guam on 00Z Sep 11th, and the 12Z ECMWF skirts just to the south of Guam before recurving to the north. It appears that the main difference between the GFS and ECMWF is how strong the mid-level ridge to the east of TD26, and how much TD26 dips to the south because of it. TD26 may also be moving faster than the models have been suggesting, but more so for the GFS than ECMWF.

Invest 90W is still being forecast to move eastward over Luzon today, and then immediately move northward and intensify slightly. There are still no expected impacts to operations from Invest 90W.

(Note: All longitude positions in the previous two discussions should have been East as well.)

Convection: An area of organized mesoscale convective activity has been developing to the NE of the area of operation during the last 12 h. This system is beginning to take the form of a squall line and is currently propagating SW towards the area of operation. A sounding released by the ship at 1430 UTC 07 September shows surface-based CAPE values in excess of 3000 J/kg with 11 knots of shear in the lowest 700 hPa, and therefore we expect this system to remain organized at it passes over the area of operation. This activity appears to be associated with the low-pressure circulation picked up by the GFS in yesterday's forecast discussion which is currently located to the east of the area of operation, placing the ship on its western flank. The GFS maintains this broad low-pressure circulation during the next 48 h, and therefore organized convection is forecasted to produce widespread precipitation in the area of operation during this time period. COAMPS appears to keep this low-pressure circulation further to the east compared to the GFS, favoring scattered convection and less precipitation over the area of operation during the next 48 h.

Large-scale: A monsoon trough extends across the region (approximate latitudinal location between Yap and Guam), with the low pressure disturbances and the associated convection developing along the trough axis and moving westward. The feature is expected to persist through the weekend supporting convective activity, prior to the arrival of TD26W. An ER wave train is also impacting the weather in the region, with the region currently in a wet phase with the potential to transition to a dry phase within the next few days as the wave moves west. The

location of the high pressure system helping to guide TD26W will be sensitive to the development and evolution of an extratropical cyclone in the North Pacific, and the arrival and southward extent of a trailing mid-latitude trough (and the interaction between the two). The ECMWF suggests a more robust mid-latitude trough and more rapid interaction with the leading extratropical cyclone keeping the high pressure further south supporting the southern track of TD26W. The GFS shows a weaker mid-latitude trough with a slower extratropical interaction, allowing a weakness in the mid-latitude flow that keeps the high pressure further north supporting the more northward track.

MJO/BSISO: The MJO forecast provided by the ECMWF was updated to include the two week period beginning on 07 September while the BOM has not been updated since 02 September. As in previous forecasts, the two models show a signal in phase 8 of the MJO over the next two weeks, indicative of enhanced convective activity over the African continent. ECMWF favors a higher amplitude signal during the first week which then decays into the second week of the forecast period. The BSISO indices from ECMWF and BOM have not been updated and thus show forecasts initiated at 03 September and 02 September, respectively. During the 5-9 day forecast beginning on these dates, both the BOM and ECMWF indicate a shift in the BSISO1 signal to phase 3 (enhanced convective activity over East Asia). BOM and ECMWF disagree on the phase of the BSISO2 signal, with ECMWF favoring phase 7 (enhanced convective activity over NE Asia) and the BOM favoring phases 1 & 2 (enhanced convective activity over the Indian Ocean and Philippine Sea).

SSTs: Sea surface temperatures are expected to be between 29-31 C.

Currents and Wave Heights:

FORECASTERS: CASAS (DELAP), MARTINEZ, AND LOMBARDO

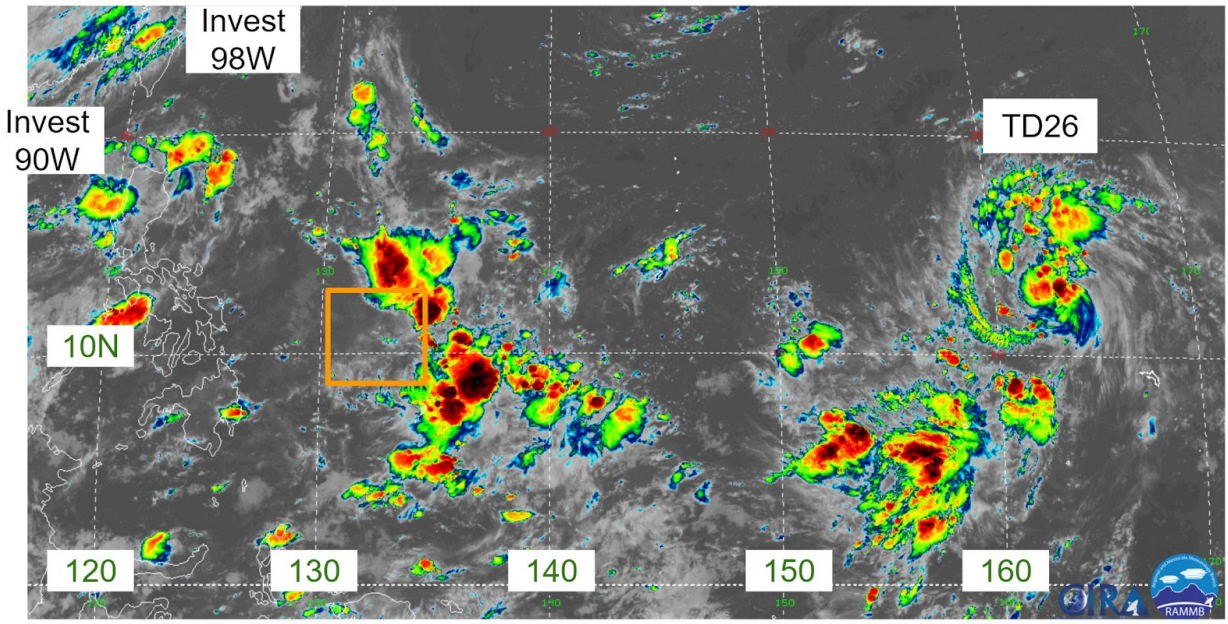

Fig. 1. Himawari IR imagery (10.4 microns) valid at 1800 UTC 07 September 2018. [1]

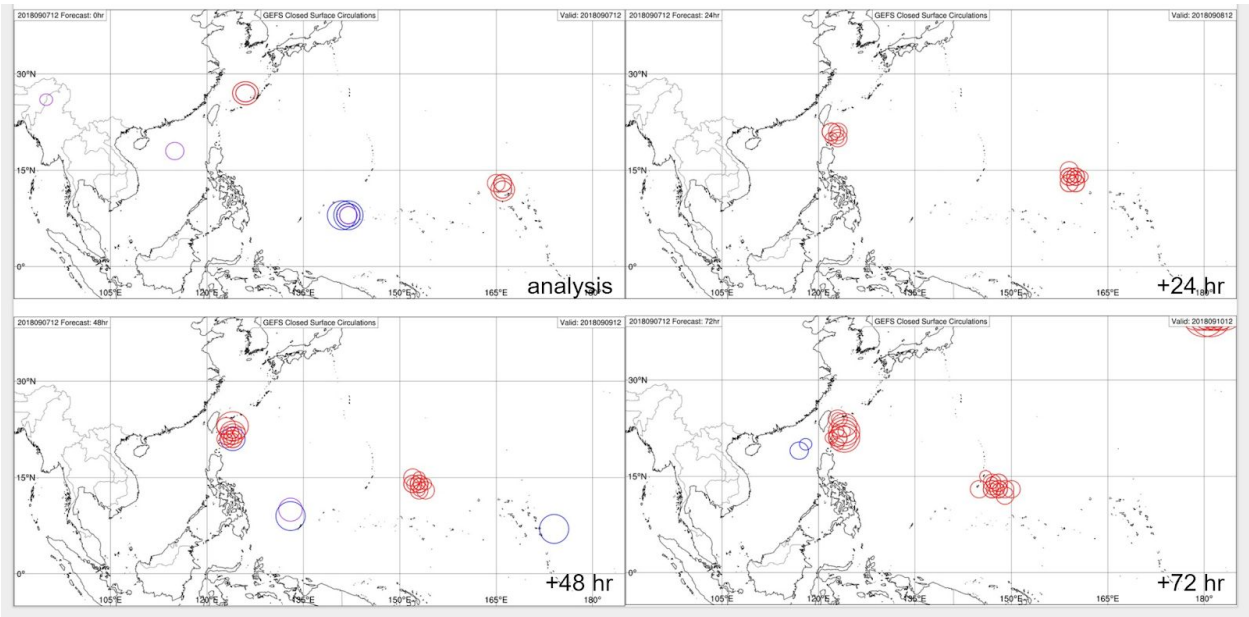

Fig. 2. GEFS ensemble 10m circulation forecast initiated at 1200 UTC 07 September 2018. [2]

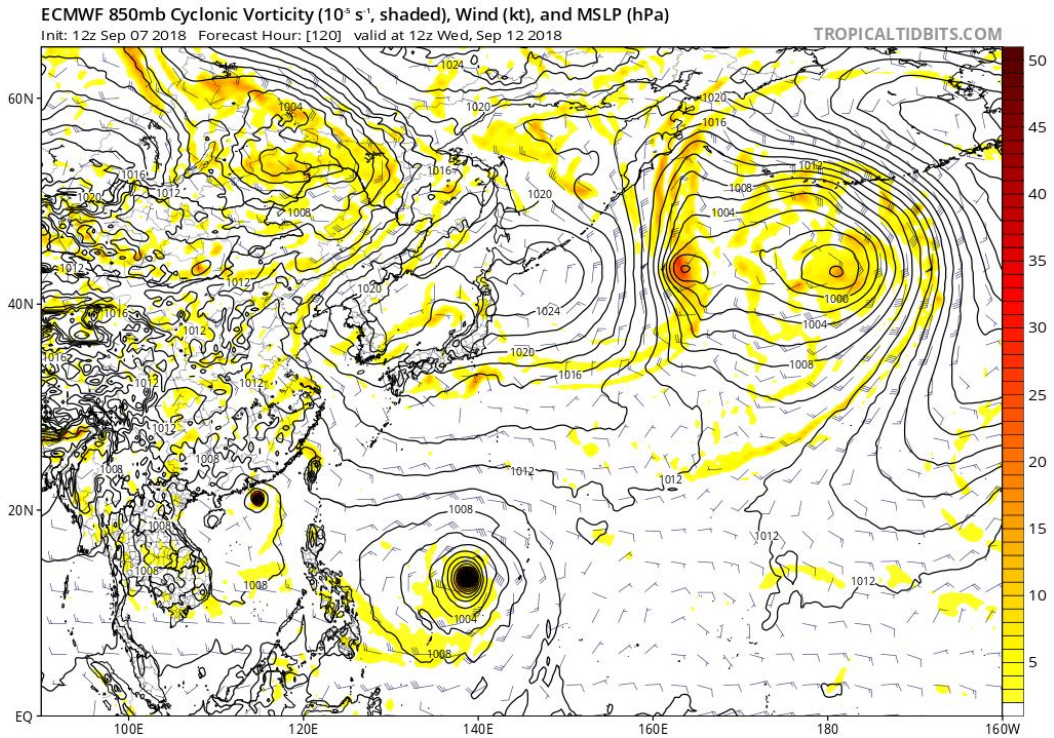

Fig 3. ECMWF vorticity (shaded) and wind barbs at 850 mb, and MSLP (contoured) initiated at 1200 UTC 07 September 2018 and valid at 1200 UTC 12 September 2018. [3]

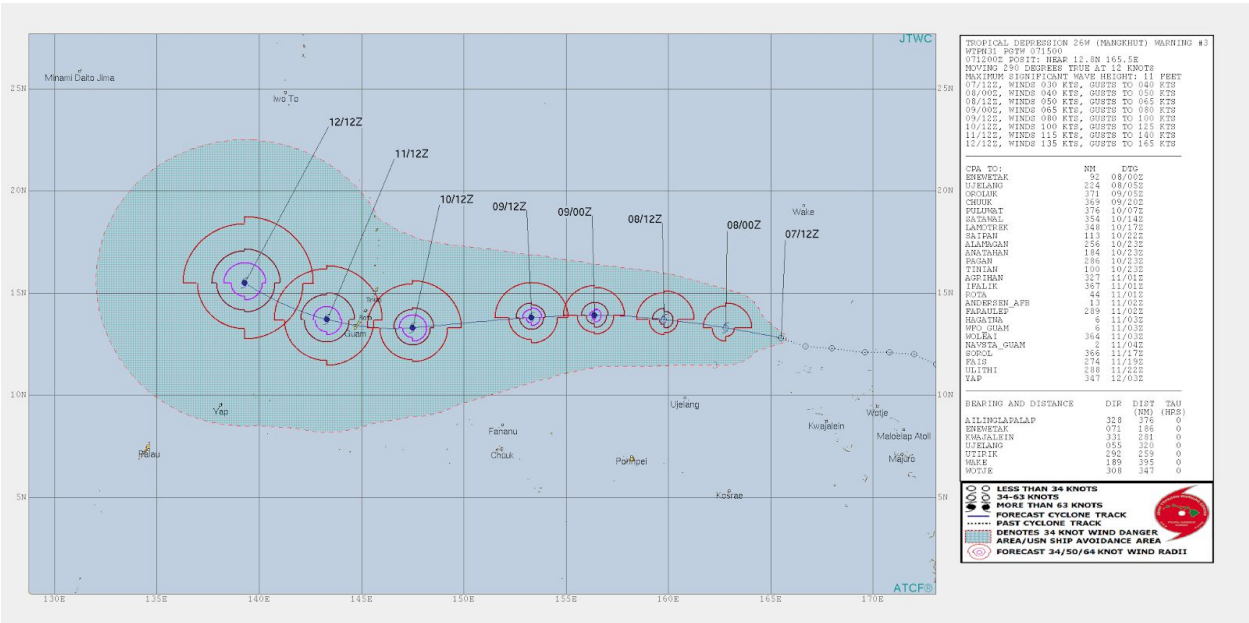

Fig 4. JTWC forecasted track/intensity for TD26W at 1200 UTC 07 September 2018.

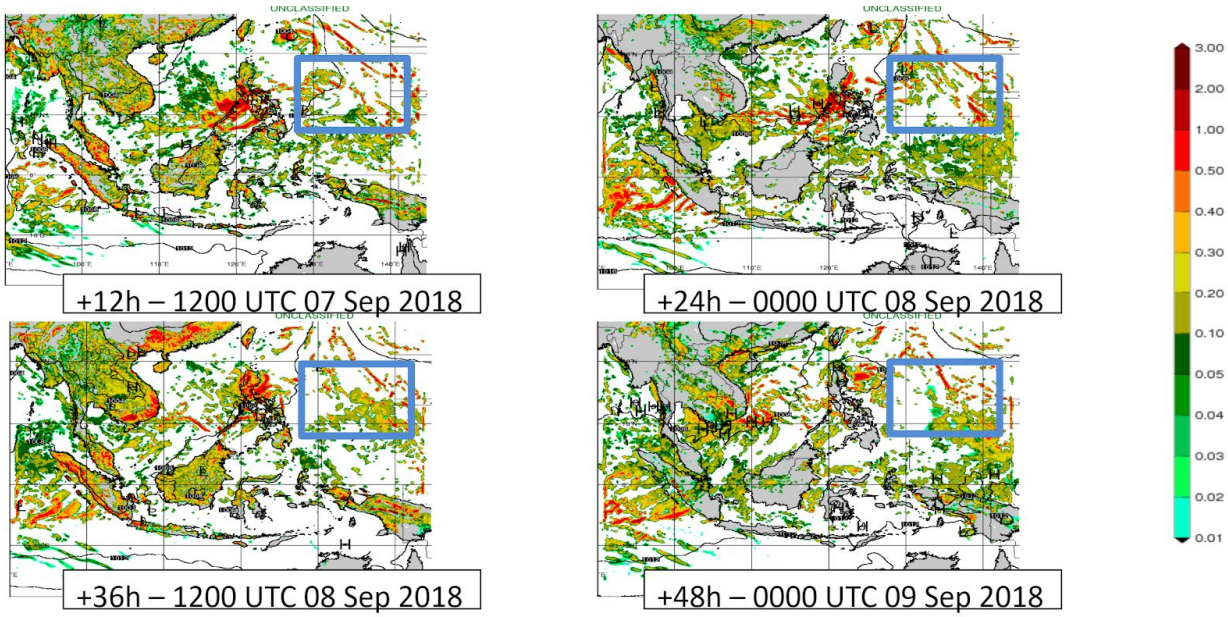

Fig. 5. COAMPS 6 hourly precipitation (shaded, inches) and MSLP (black contours) initiated at 0000 UTC 07 September 2018 and valid through 48 h (0000 UTC 09 September 2018).